III. Remarks

A. Amendments to the Claims

Applicants have introduced new independent claims 39 and 40. Claims 39 and 40 are each based on claim 21 and differ from claim 21 reciting preferred forms of drying. Support for the preferred form of drying recited in claim 39 is provided by the Specification at Paragraph [055]. Support for the preferred form of drying recited in claim 40 is provided by the Specification at Paragraphs [0047] and [0052].

B. Rejection of Claims under 35 U.S.C. Section 112

Claims 21-28 are rejected under 35 U.S.C. Section 112, first paragraph, as failing to comply with the written description requirement.

1. Examiner's reasons for the rejections

> The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Applicants amended the claimed invention to recite a step that involved drying the mixture after forming the mixture, but before irradiation of the mixture. No general teaching of this procedure was noted in the instant specification. Although Applicant points to Example 1 in the instant specification for support of the amendment, such limited support is [deemed] to be insufficient since the claims cover a much broader scope than the narrower procedure disclosed in Example 1 of the instant specification. Thus, the example is not commensurate with the scope of claims herein. Therefore, claims 21-28 are rejected for inserting new matter into the claims.

(Examiner's Action, page 2, lines 15-27).

2. Applicants' Response

Applicants' response to the rejection is being made in conjunction with a Declaration of Dr. Leo Zhaoqing Liu, including Tables 1–3. The Liu Declaration is being filed concurrently with Applicants' Amendment and Response to the Examiner's Action under 37 C.F.R. Section 1.111 and is marked as **EXHIBIT A** to it. Dr. Liu is one of the inventors of the invention disclosed and claimed in this application.

Applicants' invention as claimed in claim 21 is to a method for grafting an unsaturated monomer onto a polysaccharide comprising the steps of:

(1) forming a mixture comprised of an unsaturated monomer and a water soluble or water dispersible polysaccharide;

(2) drying the mixture; and

(3) irradiating the mixture with an amount of electron beam radiation sufficient to form an unsaturated monomer-water soluble or water dispersible polysaccharide graft copolymer, wherein the graft copolymer is depolymerized to a molecular weight lower than the molecular weight of the ungrafted polysaccharide, and the copolymer has a molecular weight of no more than 700,000 Daltons. (Liu Declaration, Paragraph 4).

The remaining claims 22–28 are also directed to the method claimed in claim 21. (Liu Declaration, Paragraph 5).

The reason for the rejection of the claimed method is that step 2 of drying the mixture is not supported by a general teaching of the procedure A in the Specification.

However, several paragraphs in the Application disclose the drying step and the occurrence of the drying step after the step of forming the mixture and before the step of irradiating the mixture. (Liu Declaration, Paragraph 7).

This disclosure is provided in Paragraph [047], which reads as follows:

> Guar powder was suspended in acetone, and then mixed with either vinyl phosphonic acid (VPA) or methacrylamidopropyltrimethylammonium chloride (MAPTAC) solution at a 10:1 ratio of guar to the respective monomer. *The mixture was then dried in a vacuum* and put into a plastic vial with its weight and within the penetration range of the electron beam. The samples were then placed on a tray carried by an endless conveyor into a radiation chamber. The samples were irradiated by electron beam generated by 4.5 MeV generator operating at a 15 milliamps beam current at the top surface of the tray. The desired dose was obtained by adjusting the linear velocity of the conveyor. (*emphasis added*)

(Liu Declaration, Paragraph 8).

Support for the drying step, prior mixing step and subsequent irradiation step is also provided by Paragraph [052], which reads as follows:

> Hydroxypropyl guar, available from Rhodia, Inc., in Cranbury, New Jersey, as Jaguar 8000, 50 parts was mixed with methacrylamidopropyltrimethylammonium chloride (MAPTAC, 50% in water), 15 parts and methanol 15 parts. *The wet mixture was then dried in a vacuum oven at 30–40 °C.* The dried powder was then packed in a plastic bag with thickness less than 3 cm. The irradiation was done as described in ***Example 1*** at a dose of 3.8 Mrad. The residual amount of non-reacted MAPTAC was analyzed by HPLC to be 0.39% in the sample (that is 97% conversion). The irradiated sample was then sprayed with 5 grams of 10% sodium metabisulfite solution in 1:1 water/methanol and then cured in a vacuum oven at 65–70°C for two (2) hours. The residual monomer was analyzed again to be 440 ppm. (*emphasis added*)

(Liu Declaration, Paragraph 9).

Additional support is provided by Paragraph [0055], which reads as follows:

> Hydroxyethylcellulose, available from Dow as Cellosize HEC QP 100M-H was sprayed with 50% MAPTAC solution at the ratios of the active components shown in ***Table 4***, and then thoroughly mixed. *The MAPTAC-swollen cellulose was then air-dried and ground in to powder for easy handling.* The irradiation and the post-treatment were done according to the procedure described in ***Example 2*** with the dose shown in ***Table 4***. The residual MAPTAC was measured by HPLC analysis after the irradiation (***Table 4***) and after further treatment (***Table 5***). The molecular weight was determined for selective samples (***Table 6***). Little or no homopolymer of MAPTAC was detected by the GPC analysis. The grafted polymer was isolated from aqueous methanol solution by precipitating with acetone. Colloid titration of the isolated polymer indicated more than 85% of the MAPTAC was attached to hydroxyethylcellulose. (*emphasis added*)

(Liu Declaration, Paragraph 10).

Paragraphs [047], [052], and [055] clearly disclose a drying step (2) between the formation of the mixture in step (1) and the irradiation of the mixture in step (3). (Liu Declaration, Paragraph 11).

Accordingly, step (2) of Applicants' claimed method as recited in claims 21, 39 and 40 is described by the Specification in the passages recited in the Liu Declaration and as identified hereabove.

Therefore, for the reasons set forth above, the rejection of claims 21–28 under 35 U.S.C. Section 212, first paragraph, as failing to comply with the written description requirement is untenable and should be withdrawn. For the same reasons, claims 39–40 should not be rejected under 35 U.S.C. Section 112.

As noted above, claim 39 differs from claim 21 in reciting that the step (2) drying step constitutes drying the mixture "in the air." Paragraph [055] of the Specification states that "[t]he MAPTAC-swollen cellulose mixture was then air dried."

Claim 40 differs from claim 21 in reciting that the step (2) drying step constitutes drying the mixture "in a vacuum." As set forth above, the Specification, at Paragraphs [047] and [055], respectively, describes drying the mixture in a vacuum and in a vacuum oven.

C. Rejection of Claims under 35 U.S.C. Section 103

The Examiner has maintained the rejection of claims 21-28 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 3,461,052 to Restaino et al. (already of record) in view of United States Patent No. 5,223,171 to Jost et al. (already of record), or United States Patent No. 4,973,680 to Billmers (newly cited).

1. Examiner's reasons in support of the rejection

> Applicants amended the claims to now claim a method for grafting an unsaturated monomer onto a polysaccharide comprising the steps of: (1) forming a mixture comprised of an unsaturated monomer and a water soluble or water dispersible polysaccharide; (2) drying the mixture; and (3) irradiating the mixture with an amount of electron beam radiation sufficient to form an unsaturated monomer-water soluble or water dispersible polysaccharide graft copolymer, wherein the graft copolymer is depolymerized to a molecular weight lower than the molecular weight of the ungrafted polysaccharide, and the polysaccharide in the copolymer has a molecular weight of no more than 700,000 [Daltons]. Additional limitations in the dependent claims include specific unsaturated monomers and specific polysaccharides.

The Restaino et al. patent discloses a process for the production of graft substrates by ionizing radiation, wherein a hydrophilic polymeric substrate is irradiated in the presence of a solution of a monomeric vinyl compound (see abstract). *See* column 2, 1st paragraph wherein suitable substrates materials are listed, which include cellulose, wool, starch, alginic acid and the alginates, vegetable gums such, for example, as locust bean gum, guar flour or gum tragacanth, gelatin, casein, pectin, polyvinyl alcohol, hydrophile high molecular weight polyalkylene glycols, and the like, which meet the requirement of the polysaccharides disclosed in instant Claims 22-25. Suitable vinyl monomers are listed in the 2nd paragraph of column 2, which include vinyl acetate, acrylic acid and its esters, methacrylic acid and its esters, acrylamide, acrylonitrile, styrene, vinyl toluene, vinyl pyridine, alkyl vinyl pyridines, divinyl benzene, butadiene, N,N-methylene bis-acrylamide, and the like, which meet the requirements of the unsaturated monomers disclosed in instant Claims 22 and 26-28. The Restaino et al. patent also teaches using radiation to produce graft copolymers wherein the radiation may also be used to depolymerize the polymers. *See* column 3, 2nd paragraph wherein the Restaino et al. patent teaches that useful graft copolymers of cellulose degradation products may be obtained by employing higher radiation doses.

The method for grafting an unsaturated monomer onto a polysaccharide of the instant claims differs from the process of producing graft copolymers in the Restaino et al. patent by claiming a drying step after forming the mixture, which proceeds to irradiation of a dry mixture.

However, the Billmers patent suggests that irradiation of a dry mixture for grafting is known in the art by disclosing methods for preparing graft polymers which include polymerization in water, in water-solvent mixtures, and in the dry state, which may be initiated by irradiative techniques (see column 9, lines 59-62). The Billmers patent teaches preparation of polysaccharide graft polymers having structure (II) "Sacch--O-(-G)$_m$(M)$_n$" (see column 2, line 57), wherein Sacch is a polysaccharide and G is the residue of a polymerizable unsaturated monomer, which embraces the polysaccharide and unsaturated monomer recited in the instant claims.

The method for grafting an unsaturated monomer onto a polysaccharide of the instant claims also differs from the process of producing graft copolymers in the Restaino et al. patent by claiming that the polysaccharide in the copolymer has a molecular weight of no more than 700,000 Daltons.

However, the Jost et al. [patent], which discloses detergent composition containing biodegradable graft polysaccharide shows that graft

> polysaccharide which consists essentially of a polydextrose having an average-weight molecular mass of less than 10,000 is well known in the art (see abstract). The average-weight molecular mass of less than 10,000 disclosed in the Jost et al. patent falls [within] the requirement of the instant claims that the polysaccharide in the copolymer has a molecular weight of no more than 700,000 Daltons. *See* column 2, lines 22–25, wherein the Jost et al. patent discloses graft polydextrose being obtained by any known process for grafting ethylenically unsaturated monomers onto polysaccharides and the next sentence which states that the grafting may be effected by irradiation, which is within the scope of the process requirements of instant Claims 21–28.
>
> One having ordinary skill in the art would have been motivated to combine the teaching of the Restaino et al. patent with the teachings of the Billmers and Jost et al. patent since each of the patents disclose preparation of polysaccharide by grafting [an] unsaturated monomer onto a polysaccharide.
>
> Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the grafting conditions used to produce graft copolymers via radiation of the Restaino et al. patent with grafting under dry conditions in view of the recognition in the art, as [evidenced] by the Billmers patent, that the preparation of graft polysaccharide in a dry state is an effective procedure for attaching unsaturated monomers onto polysaccharides. It also would have been obvious to produce polysaccharide having a molecular weight of not more than 700,000 Daltons in view of the recognition in the art, as evidenced by the Jost et al. patent, that polysaccharide having an average-weight molecular mass of less than 10,000 allows for the preparation of a product which is biodegradable.

(Examiner's Office Action, page 3, line 28 to page 6, line 5).

2. Legal standard for determining whether Applicants' claims are obvious under 35 U.S.C. Section 103

The legal interpretation of Section 103 to be applied is set forth in the recent Supreme Court decision of *KSR International Co. v. Teleflex Inc. (KSR)*, 550 U.S. __, 82 USPQ2d 1385 (2007). *KSR* cites *Graham v. John Deere Co. of Kansas City* (383 U.S. 1, 17B18 [148 USPQ 459] (1966)) as setting out an objective analysis for applying Section 103. (82 USPQ2d at 1388). The objective analysis is as follows:

> Under § 103, the scope and content of the prior art are to be determined, the differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or nonobviousness of the subject matter is determined. Such secondary considerations as commercial success, long felt but unsolved needs, failure of others, *etc.*, might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented. As indicia of obviousness or nonobviousness, these inquiries may have relevancy.

(148 USPQ at 467).

Accordingly, the factual inquiries set forth by the Court are as follows:

- [T]he scope and content of the prior art are . . . determined;
- Differences between the prior art and the claims at issue are . . . ascertained;
- The level of ordinary skill in the pertinent art [is] resolved; and
- Such secondary considerations as commercial success, long felt but unsolved needs, failure of others, *etc.*, might be utilized. . . .

3. Application of the *Graham v. John Deere Co.* factual standards

(a) Determining the scope and content of the prior art

Restaino et al. discloses:

> A process for the radiation induced grafting of vinyl monomers to hydrophilic polymeric substrates, particularly polyvinyl alcohol. . . . The substrate moistened with water is contacted with a fluid vinyl monomer capable of free radical catalyzed polymerization and irradiated with high energy ionizing radiation to a dosage of 2000 to 10^8 roentgens.

(Abstract).

The Restaino et al. process "comprises contacting the vinyl monomer in fluid, preferably liquid, form with moist substrate irradiated with ionizing radiation. The irradiation of the moist substrate may be effected prior to its contact with the fluid monomer or while it is in contact therewith. (Column 2, lines 23-28).

In the Restaino et al. process, "[t]he degree of moistening can vary over a wide range. As little as 10% by weight of water on the hydrophilic substrate markedly increases the rate of grafting." (Column 2, lines 31-34). Restaino et al. further discloses:

> A preferred procedure, then, is to moisten the hydrophilic substrate with from about 30% to about 100% of the amount of water it will imbibe without formation of a supernatant phase, immerse the moistened substance in the chosen vinyl monomer or monomers, or in a solution thereof in an inert solvent, subject the suspension to gamma-ray irradiation, remove it from the radiation field and separate the formed graft copolymer from an reacted and homopolymerized monomer.

(Column 2, lines 54-62).

In Example 1, Restaino et al. describes the irradiation of moist filter paper which had been immersed in water until fully soaked, then treated with a solution of monomeric acrylic acid in benzene and irradiated. The treated paper was determined to be a graft copolymer of acrylic acid on cellulose and gained 23.6% in weight over the original filter paper. (Column 3, lines 36-58).

Example 1 also discloses the same procedure was followed using dry filter paper in place of moist filter paper.

> Dry filter paper immersed in acrylic acid solution of the same concentration and subjected to the same degassing, irradiation dose and separation procedure as the foregoing showed no gain in weight at all.

(Column 3, lines 63-66).

In all of the Examples according to the invention, the material to be irradiated is moist and the product weighed more than the treated material, *i.e.*, the product was a graft copolymer. The comparative Examples in which the material to be irradiated is dry prior to irradiation resulted in no weight gain, or virtually no weight gain. *See* column 3, lines 62-66, column 4, lines 22-25, column 5, lines 44-48, and column 6, lines 20-22 and 71-72. If the hydrophilic polymeric substrates are dry prior to irradiation, the irradiation step produces no cross-linking.

In support of the rejection, the Examiner relies on Restaino et al. as disclosing "a process for the production of graft substrates by ionizing radiation, wherein a hydrophilic polymeric substrate is irradiated in the presence of a solution of a monomeric vinyl compound." The Restaino et al. patent is also relied on as teaching "using radiation to produce graft copolymers wherein the radiation may also be used to depolymerize the polymers." (Examiner's Action dated April 17, 2006, page 6, lines 17-19 and page 6, line 29, to page 7, line 2). The Examiner particularly relies on the passage at column 3, lines 11-13, which is part of the following passage at column 3, lines 4–13:

> Higher radiation doses, up to and even exceeding 10^8 roentgens may be employed. Obviously, if the substrate undergoes depolymerization or degradation under the effect of radiation and it is desired to retain the polymeric structure of the substrate the dose must be correspondingly limited. Thus, when grafting onto cellulose, excessive degradation is avoided by keeping the radiation dose below about 10^6 roentgens. Useful graft copolymers of cellulose degradation products may, however, be obtained by employing higher radiation doses.

This passage discloses that if the "substrate" (which refers to hydrophilic substrates such as cellulose) undergoes depolymerization or degradation under the effect of radiation and it is desired to retain the polymeric structure of the substrate, *i.e.*, the cellulose, the dose must be correspondingly limited. Thus, when grafting onto cellulose, excessive degradation of the cellulose is avoided by controlling the radiation dose. By employing higher radiation doses, useful graft polymers of cellulose degradation products may be obtained. Hence, at higher radiation doses the cellulose is degraded and then grafted.

The Examiner relies on Jost et al. for the disclosure of a graft polysaccharide having a molecular weight of less than 700,000 Daltons.

> However, the Jost et al. patent, which discloses detergent composition containing biodegradable graft polysaccharide, shows that graft polysaccharide which consists essentially of a polydextrose having an average-weight molecular mass of less than 10,000 is well known in the art (*see* abstract). The average-weight molecular mass of less than 10,000 disclosed in the Jost et al. patent falls within the requirement of the instant claims that the polysaccharide in the copolymer has a molecular weight of no more than 700,000 Daltons.

(Examiner's Action, page 5, lines 11–17).

Jost et al. is directed to:

> A detergent composition containing, as a "builder," a graft polysaccharide which consists essentially of a polydextrose having an average-weight molecular mass of less than 10,000 and onto which a water-soluble ethylenically unsaturated monomer is grafted.

(Abstract).

Jost et al. discloses that grafting may be effected by irradiation. The grafted product is a combination of the polydextrose and the ethylenically unsaturated monomer. Accordingly, the product has a higher molecular weight than the monomers forming the product. (Column 2, lines 22–25).

The Billmers invention:

> . . . relates to polysaccharide derivatives and polysaccharide graft polymers which contain organosiloxane substituents. These compositions are prepared by reacting a polysaccharide with a difunctional reagent which contains a siloxane group and a group which will react with a polysaccharide. ***The polysaccharide-reactive group of the reagent forms an ether or ester linkage with the polysaccharide, thereby attaching a reactive siloxane group to the polysaccharide*** *(emphasis added)*.

(Column 1, lines 6–14).

As noted by the Examiner, Billmers discloses at column 2, line 57, the structure of the polysaccharide graft polymer in which the polysaccharide is grafted onto polymerizable unsaturated monomers by an ester or ether linkage. (*See* column 2, lines 54–67).

The Examiner also refers to column 9, lines 59-62, of Billmers, which reads as follows:

> Methods for preparing graft polymers include polymerization in water, in water-solvent mixtures, and in the dry state and may be initiated by mechanical, chemical and irradiative techniques.

However, Billmers does not exemplify the preparation of graft polymers by polymerization in the dry state or by the use of irradiative techniques.

(b) Ascertaining the differences between the prior art and the claims at issue

As described in the Abstract, Restaino et al. discloses a process for the radiation induced grafting of vinyl monomers to hydrophilic polymeric substrates. Restaino et al. discloses that the hydrophilic starting polymer should be moistened with water before irradiation. (Column 2, lines 13-62). This disclosure is followed in all of the Examples according to the invention.

Restaino et al. further discloses repeatedly that "dry" hydrophilic starting polymers treated in the same manner as the moist starting polymers had no gain in weight, or virtually no gain in weight, indicating that no grafting occurred. (*See* column 3, lines 63-66, column 4, lines 22-25, column 5, lines 44-48 and column 6, lines 20-22 and lines 71-72).

As noted above, the Examiner relies on column 3, lines 11-13 of Restaino et al. for a teaching of using radiation to produce graft polymers wherein the radiation may also be used to destabilize the polymers (Examiner's Action, page 4, lines 20-22).

This passage in Restaino et al. discloses that when grafting onto cellulose, excessive degradation to the cellulose is avoided by controlling the radiation dose. By employing higher radiation doses, useful graft polymers of cellulose degradation products may be obtained. Hence, at higher radiation doses, the cellulose is degraded and then grafted.

In Applicants' claimed method, the step to form the polysaccharide graft copolymers precedes depolymerization of the graft copolymer. In Restaino et al., the degradation of the cellulose precedes the formation of the graft copolymer. Accordingly, Restaino et al. does not disclose Applicants' claimed method step of depolymerization of the graft copolymer, let alone depolymerization of the graft copolymer to a molecular weight lower than the molecular weight of the ungrafted polysaccharide.

Applicants' process as claimed in claims 21-28 comprises the step of drying the mixture of unsaturated monomer and polysaccharide before irradiation. Accordingly, Applicants' claimed process has a drying step which is the opposite of the moistening step in the process described in Restaino et al. Indeed, Restaino et al. discloses that drying the material before irradiation is to be avoided because the irradiated material does not undergo grafting.

Jost et al. discloses grafting a polysaccharide onto a water-soluble ethylenically unsaturated monomer. Jost et al. does not disclose Applicants' claimed method step (3) of irradiating the mixture with an amount of electron beam radiation sufficient to form an unsaturated monomer-water soluble or water dispersible graft copolymer, wherein the graft copolymer is depolymerized to a molecular weight lower than the molecular weight of the ungrafted polysaccharide. In addition, Jost et al. does not disclose that the starting material undergoes the step of drying the mixture prior to the irradiation step.

As noted above, Billmers discloses three methods of graft polymerization. They are: (i) polymerization in water; (ii) in water-solvent mixtures; and (iii) in the dry state. Billmers also discloses that polymerization may be initiated by mechanical, chemical and irradiation techniques.

The Restaino et al. process requires that the polymers be moist. Dry hydrophilic starting polymers treated in the same manner as the moist starting polymers had no gain in weight, or virtually no gain in weight. The Restaino et al. method does not operate with dry polymers.

A combination of the teachings of Restaino et al. and Billmers consistent with both references requires irradiation with moistened materials. The Examples in Billmers illustrate polymerization only in the wet state, and the Restaino et al. process requires moisturizing the starting materials before irradiation. The mere mention in Billmers of polymerization in the dry step provides no motivation to one of ordinary skill in the art to replace the polymerization method disclosed in, and essential to, the practice of the Restaino et al. invention.

Billmers, like Jost et al., does not disclose Applicants' claimed method steps of drying the mixture and depolymerizing the graft copolymer to a molecular weight lower than the molecular weight of the ungrafted polysaccharide. As the Examiner observes, Restaino et al. discloses a polysaccharide graft polymer in which a polymerizable unsaturated monomer is grafted onto the polysaccharide. *See* Examiner's Action, page 5, lines 2-6.

In Applicants' claimed method, the drying step produces significant advantages, contrary to the disclosure in Restaino et al.

As described in his Declaration, Dr. Liu conducted a series of tests to determine more precisely the effect of the drying step on the method disclosed and claimed in his application. These tests included a drying step in which the initial mixture, produced according to step 1 of the claimed method, was dried to moisture contents of between about 0.74% and 30.2% according to step 2 of the claimed method. The dried mixtures were treated according to step 3 of the claimed process and were measured in terms of the percentage conversion of the mixture to the graft copolymer at different concentrations of electron beam radiation. The data obtained in these tests are set forth in Tables 1-3, which include a three-dimensional graph of the data for each of Tables 1-3. The graphs show for each test the moisture content, the dose of electron beam radiation, and the rate of conversion of the mixture into a polysaccharide graft copolymer. (Liu Declaration, Paragraph 12).

On the basis of the results submitted in Tables 1-3, Dr. Liu determined that for lower doses of electron beam radiation, the optimum range for drying the mixture is to a moisture content of 5-20%. Drying the mixture to 30% moisture content at which the dried mixture felt dry still improved the efficiency of the claimed method. The drying step resulted in a higher rate of conversion of the mixture into a polysaccharide graft copolymer. The absence of a drying step also had the disadvantage that a greater amount of electron beam radiation was needed to accomplish the formation of the polysaccharide graft copolymer to the same degree. In addition, the product resulting from the drying step has the advantage that it is generally easier to handle than the product without the drying step. (Liu Declaration, Paragraph 13).

Drying the mixture to a moisture content below 5% will still improve the efficiency of the claimed method. It should be noted that excessive drying, *i.e.*, so that the material contained no moisture, was neither necessary nor desirable as the completely dry mixture could pose a hazard if further subjected to electron beam radiation. (Liu Declaration, Paragraph 14).

As noted above, Restaino et al. discloses that the mixture to be irradiated must be moist, *i.e.*, cannot feel dry. Jost et al. does not disclose drying the mixture before irradiation. Aside from the mere mention of a dry state, Billmers exemplifies a starting material that is wet or a liquid.

(c) Resolving level of ordinary skill in the pertinent art

The inventors of the present application and the inventors of the prior art patents would represent persons of ordinary skill in the art.

(d) Utilizing, if possible, such secondary considerations as commercial success, long felt but unsolved needs, failure of others

There has been a need for a method of modifying water-dispersible and/or soluble cellulose derivatives with vinyl monomers with the intention of producing new products that can be used, preferably in liquid compositions by preparation of graft polysaccharides having a controlled molecular weight that is lower than the original polysaccharides.

4. Applicants' claimed method is nonobvious over the Restaino et al., Jost et al. and Billmers patents

Accordingly, for the reasons set forth above, the rejection of claims 21-28 under 35 U.S.C. Section 103(a) as being unpatentable over United States Patent No. 3,461,052 to Restaino et al., i n view of United States Patent No. 5,223,171 to Jost et al. or United States Patent No. 4,973,680 to Billmers, is untenable and should be withdrawn.

D. Confirmation that Invention is Commonly Owned

On page 3, lines 10-17 of the Action, the Examiner observes:

> This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Applicants confirm that the subject matter of the various claims has been commonly owned since the time the invention was made.

E. Applicants' Information Disclosure Statement Has Been Made Compliant

In the Action, the Examiner notes:

> The information disclosure statement filed October 9, 2007, fails to comply with 37 C.F.R. 1.98(a)(e) because it does not include a concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information, of each patent listed that is not in the English language. It has been placed in the application file, but the information referred to therein has not been considered.

(Examiner's Action, page 6, lines 8–14).

The references made of record in that statement were considered by the Examiner on March 24, 2008. The references at issue, German Patent Application Publication Nos. DE 4207465 and DE 19627259, were made of record in compliance with 37 CFR 1.98(a)(3)(ii) through the filing of English language translations of these publications on March 20, 2008. Both of the translations are identified on the Image File Wrapper of the application on PAIR by the entries "FOR" at March 20, 2008.

IV. Conclusion

Applicants believe that the foregoing Amendments and Remarks constitute a complete response under 37 C.F.R. Section 1.111 and that all bases of rejection in the Examiner's Action have been adequately rebutted or overcome. A Notice of Allowance in the next Office is, therefore, respectfully requested. The Examiner is requested to telephone the undersigned attorney if any matter that can be expected to be resolved in a telephone interview is believed to impede the allowance of pending claims 21-28 and 39-40 of United States Patent Application No. 10/607,079.

Respectfully submitted,

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